The second exam is focused on SQL, and it covers the topics discussed in class since the first exam. It will be closed book and closed notes and will focus on the lecture notes, class discussions, and homework assignments – you should use the textbook for clarification of concepts and their significance, but material from the text that was not covered in class will not be on the exam.

The exam will be worth 100 points, and will be a combination of True/False and multiple choice (including fill in the blank) questions.

**Introduction to SQL:**
- Purpose of SQL
- Characteristics of SQL
- Standards
- History
- Categories of SQL commands
  - Data Definition Language
    - Purpose
    - Primary commands
  - Data Manipulation Language
    - Purpose
    - Primary commands

**Data Manipulation Language:**

**Single-table data retrieval:**
- SELECT (basic syntax)
- Wildcard (*)
- WHERE clause
  - Arithmetic operators (=, >, <, <=, =>)
  - Logical operators (AND, OR, NOT)
  - Clauses (BETWEEN, LIKE, RLIKE, IN)
- NULL values
- Ordering / sorting
- Column aliases
- Date syntax / functions
  - DATE( ), NOW( ), DATE_SUB( ), INTERVAL N YEAR
- DISTINCT
- Aggregate functions
  - MIN( ), MAX( ), SUM( ), AVG( ), COUNT( )
- Subqueries
- GROUP BY
- HAVING
- Concatenation / String manipulation / Number formatting
  - CONCAT( )
  - FORMAT( )

**Action queries:**
- INSERT
- UPDATE
- DELETE
  - Syntax / formatting / options
Multiple-table data retrieval:
  Table aliases
  Cross join
  Inner Join
  - "old-style"
  - INNER JOIN ... ON
  - USING
  - Equijoin
  - Theta join
  - Self join
Outer join
  - LEFT JOIN ... ON
  - RIGHT JOIN ... ON
UNION
IF

Understand when, why, and how to do each of the above....